

REMARKS

Claims 1-7 and 19-20 remain pending in the application. Claims 1 has been amended. Claims 8-18 have been canceled. Claims 19-20 have been added.

The disclosure stands objected because of certain informalities.

In response, Applicants have amended the Specification to correct the stated informalities

The Drawings stand objected to for failure to label the old drawings 'Prior Art'.

In response, Applicants are submitting herein a replacement sheet wherein Fig. 1 and 2 have been labeled 'PRIOR ART'.

Accordingly, Applicants believe that the Specification including the Drawings is now free of any objections and respectfully request that the Examiner withdraw the stated objections.

Claims 8-18 are withdrawn from consideration as non-elected claims and are therefore canceled without prejudice.

Claims 1-4 and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Imafuku (U.S.P. 6,074,518)

Applicants respectfully traverse this assertion for the following reasons:

- 1) Imafuku teaches a plasma confinement in the bulk gas phase, and excludes (specifically) any magnetic field protection of any of the processing area/wafer.
- 2) Applicants, on the other hand, teach to selectively apply magnetic reflection to the edges of the wafer to prevent damage/polymer formation. Thus, the magnetic reflection (i.e., reduction) at the edges of the wafer are deemed a distinguishing feature which teaches away from the cited prior art.

- 1) Imafuku teaches the use of magnetic tori to confine the plasma, and specifically prohibits magnetic field reflection in the wafer region (a key teaching of the Applicants).
- 2) Specifically, attention of the Examiner is directed, for instance, to Imafuku's Claim 3 which requires two magnetic tori with facing, opposite poles.

Attention of the Examiner is further directed to the recitation by Imafuku on col. 2, lines 55-65:

"According to another aspect of the present invention, a plurality of magnets are arranged in an annular form near each of the first and second electrodes in the chamber. At the same time, the magnets of the first group arranged on the first electrode side are set oppose the magnets of the second group arranged on the second electrode side such that the magnetic poles of opposing magnet pairs around the first and second electrodes are opposite to each other. Local magnetic fields are formed around the space between the first and second electrodes, the charged particles in the plasma can be trapped, and plasma diffusion can be prevented."

Imafuku requires two tori of magnets, and provides a specific reasoning as to why these are required. In contradistinction, Applicants require only one, so that the magnetic field encompasses the wafer edge.

Applicants' teaching is directed towards a design which specifically prevents magnetic field formation in the wafer processing region, as evidenced below (Col 3, line6-10):

"The magnetic field strength generated by the magnets is preferably set to 10 Gauss or less because the prescribed plasma process is performed without adversely affecting the plasma in the plasma process region of the object to be processed such as a wafer."

Applicants specifically teach a design wherein the magnetic field is inhibited from propagating into the plasma processing region, i.e. the edges of the wafer.

In addition, Applicants require a magnetic field which field strength which is much greater than 10G, i.e., 200G (vs. 0-80G) taught by Imafuku, to reflect (reduce) plasma electrons in the region surrounding the edges of the wafer.

Accordingly, Applicants believe that Imafuku teaches away from what they deem to be their invention, as now clearly spelled out in amended claim 1.

In view of the foregoing amendments and arguments, Applicants deem that they have now overcome the rejection of Claims 1-4 and 6 over Imafuku, and respectfully request that the Examiner reconsider and withdraw the rejection of the started claims under 35 U.S.C. § 102(b).

Claims 1-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Seta (JP 2000-036486).

Applicants respectfully traverse the above rejection for the following reasons:

1) Seta teaches the formation of fixed magnetic fields to enhance plasma density at the edge of the wafer during deposition. In contradistinction, Applicants teach reflections (i.e., reduction) of the plasma density in the region during plasma etching. In view of the stated differences, it follows that the orientation of the magnetic fields is diametrically the opposite of the orientation taught by Applicants, in addition to the strength of the applied magnetic field. Thus, Seta's teaching is directed to the plasma density increasing at the edges of the wafer, whereas for the Applicants' there will be no plasma at the edges of the wafer, as recited in amended claim 1.

2) Applicants further teach an embedded magnet which applied field is axisymmetric (i.e., any angle at a given radius has the same magnetic field strength, and physical

structure). Seta's magnetic field is not, i.e., it periodically varies over a given angle and radius.

3) Sato's magnetic field strength varies from 0 - 80 G. As mentioned previously, Applicants' applied strength is higher (i.e., > 200G). This is required to reflect the plasma away from the edge of the wafer. Seta teaches how to enhance the plasma density in this region, not reflect it.

In view of the foregoing amendment and arguments, Applicants believe that claims 1-5 and 20 are free of rejection under 35 U.S.C § 102(e) over Seta (JP 200-036486), and respectfully request that the Examiner reconsider and withdraw the rejection of the stated claims based thereon.

Claims 5 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Imafuku (USP 6,074,518) in view of Seta (JP 2000-036486)

Applicants respectfully traverse the above rejection for the following reasons:

When combining the teachings of Imafuku with Seta's, the combination teaches an apparatus according to claim 1 wherein the magnet is an electromagnet, a teaching not found in Imafuku. Yet, the combination of the two cited references teaches away from what Applicants deem to be their invention, that is, reflections (i.e., reduction) of the plasma density in a selected region during plasma etching. In view of the stated differences, it follows that the orientation of the magnetic fields also is diametrically the opposite as well as the strength of the applied magnetic field.

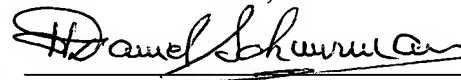
Thus, Applicants believe that amended claim 1 and claims dependent thereof are patentable over Imafuku in view of Seta and respectfully request that the Examiner reconsider and withdraw the rejection of claims 5 and 7 based on 35 U.S.C. § 103(a).

In view of the foregoing amendments and arguments, it is respectfully requested that all the outstanding objections and rejections to this application be reconsidered and withdrawn and that the Examiner pass all the pending claims to issue.

Should the Examiner have any suggestions pertinent to the allowance of this application, the Examiner is encouraged to contact Applicants' undersigned representative.

Respectfully submitted,
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